

CLAIMS

1. Process for increasing the molecular weight of a polyamide via solid-state post-condensation by exposing the polyamide prepolymer in the solid-state at elevated temperature to an inert gas atmosphere, characterized in that the process comprises a step (a) wherein the gas atmosphere to which the polyamide is exposed has a dew temperature T_{dew-1} , followed by a step (b) wherein the gas atmosphere to which the polyamide is exposed has a dew temperature T_{dew-2} , whereby T_{dew-1} is higher than T_{dew-2} .
5. Process according to Claim 1, wherein the polyamide is polyamide-6 or polyamide-12.
10. Process according to Claim 1, wherein the polyamide has a melting temperature of at least 260°C.
15. 4. Process according to Claim 3, wherein the polyamide is chosen from the group consisting of polyamide-4,6, copolymers thereof, polyamide-6,6 and copolymers thereof.
5. Process according to any of Claims 1-4, wherein T_{dew-1} is at least 10°C higher than T_{dew-2} .
20. 6. Process according to any of Claims 1-5, wherein T_{dew-2} is at most 20°C.
7. Process according to any of Claims 1-6, wherein T_{dew-1} is at least 30°C.
8. Process according to any of Claims 1-7, wherein the gas atmospheres of step (a) and step (b) have a temperature between 20°C and 100°C below the melting temperature of the polyamide polymer.
25. 9. Process according to any of Claims 1-8, wherein the gas atmosphere of step (a) has a temperature T_{gas-1} and the gas atmosphere in step (b) has a temperature T_{gas-2} , whereby T_{gas-1} is at least 10°C higher than T_{gas-2} .
10. Process according to any of claims 1-9, wherein the polyamide has an initial-viscosity number VN_0 of at most 100 ml/g.
30. 11. Process according to any of Claims 1-10, wherein at the end of step (a), the polyamide has an intermediate-viscosity corresponding with a viscosity number VN_{int} and at the end of step (b) the polyamide polymer has an end-viscosity corresponding with a viscosity number VN_{end} , whereby VN_{int} is at most 90% of VN_{end} , measured according to ISO 307.

12. Process according to any of Claims 1-11, wherein step (b) is started after the polyamide in step (a) has obtained an intermediate-viscosity corresponding with a viscosity number VN_{int} of at least 70 ml/g, measured according to ISO 307.
- 5 13. Process according to any of Claims 1-12, wherein the polyamide comprises at least one additive chosen from a group comprising fillers, reinforcing agents, flame retardants, colorants and stabilizers.